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Gormley, G., McKeown, G., & Sterling, M. (2012). Keeping it real! Enhancing realism in standardised patient OSCE stations. *Clinical Teacher*, 9(6), 382-386. [9]. <https://doi.org/10.1111/j.1743-498X.2012.00626.x>

Published in:
Clinical Teacher

Document Version:
Early version, also known as pre-print

Queen's University Belfast - Research Portal:
[Link to publication record in Queen's University Belfast Research Portal](#)

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High
fidelity

Keeping it real! Enhancing realism in standardised patient OSCE stations

Gerry Gormley, Department of General Practice, Queen's University Belfast, UK
Margaret Sterling, Clinical Skills Education Centre, Queen's University Belfast, UK
Allison Menary, Centre for Medical Education, Queen's University Belfast, UK
Gary McKeown, School of Psychology, Queen's University Belfast, UK

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SUMMARY

Background: Objective structured clinical examinations (OSCEs) are a commonly used method of assessing clinical competency in health care education. They can provide an opportunity to observe candidates interacting with patients. There are many challenges in using real patients in OSCEs, and increasingly standardised patients are being used as a preference. However, by using standardised patients there is a risk of making the encounter artificial and removed from actual clinical practice.

Context: Efforts made in terms of cognitive, auditory, visual,

tactile, psychological and emotional cues can minimise the differences between a simulated and real clinical scenario. However, a number of factors, including feasibility, cost and usability, need to be considered if such techniques are to be practicable within an OSCE framework.

Innovation: This article describes a series of techniques that have been used in our institution to enhance the realism of a standardised patient encounter in an OSCE. Efforts in preparing standardised patient roles, and how they portray these roles, will be considered. A wide variety of

equipment can also be used in combination with a patient and the surrounding environment, which can further enhance the authenticity of the simulated scenario.

Implications: By enhancing the realism in simulated patient OSCE encounters, there is potential to trigger more authentic conscious responses from candidates and implicit reactions that the candidates themselves may be less aware of. Furthermore, using such techniques may allow faculty members to select scenarios that were previously not thought possible in an OSCE.

INTRODUCTION

Objective Structured Clinical Examinations (OSCEs) are widely used in the assessment of clinical competency.¹ They provide an opportunity to observe candidates interact with real (i.e. patients with actual clinical features) or simulated (i.e. actors who simulate clinical features) patients. However, there are challenges in using real patients in OSCEs.² Difficulties can arise in standardising real patients with similar clinical features across different OSCE circuits. Furthermore, many clinical signs are not suitable for repeated examinations (e.g. knee osteoarthritis). Blueprinting an OSCE may not systematically sample across the entire curriculum, given the inappropriateness of using patients with certain real conditions (e.g. breaking bad news to a cancer patient). Because of these issues, trained lay persons simulating 'real' patients are often used. However, by replacing real with standardised patients (SPs) there is a risk of making the encounter artificial. No doubt many of us who have examined in OSCEs have experienced a poorly simulated encounter that bore little resemblance to actual clinical practice. In such situations it can appear that candidates are going through the 'motions' of the OSCE checklist, rather than demonstrating how they would actually respond in reality.

In this article we would like to review some of the techniques and principles that can be used to enhance the realism of SP roles in OSCEs.

WHAT MAKES AN IDEAL STANDARDISED PATIENT ENCOUNTER IN AN OSCE?

The use of SPs in OSCEs is well described in the literature.^{3,4} When developing a realistic SP encounter, a number of principles should be considered (Box 1).

Box 1. Desired principles for developing an ideal encounter with a standardised patient in an objective structured clinical examination (OSCE)

- Where possible, the simulated patient (SP) encounter should resemble actual clinical practice (in terms of patient characteristics pertaining to the clinical situation, the clinical presentation, and verbal and non-verbal responses, etc.).
- All candidates should be presented with the same test experience (i.e. variation between SPs, in the same station, but in different circuits, should be minimised).
- The simulation must be acceptable to the SP (for example a female SP is happy to partake in hybrid simulation with a pelvic manikin).
- The skill being assessed must be suitable to multiple candidate examinations and has no foreseeable risks to the SP (for example not causing pain to a patient after repeated examinations of their knee or potential psychological sequelae from portraying a suicidal presentation to multiple candidates).
- Minimal effort should be required to train and prepare SPs in their roles (i.e. quite complex clinical scenarios and equipment may not be practical in an OSCE setting).
- There should be a minimal set-up time between candidates.
- There should be a low risk of equipment failure, and if so minimal time should be required to set up the backup equipment.

TECHNIQUES AND EQUIPMENT USED TO ENHANCE REALISM IN OSCEs

The veracity and authenticity of a simulation scenario will depend not only on the explicit cues at the focus of the scenario, but also crucially depends on many implicit environmental and sensory cues. Minimising the differences between simulated and real situations in terms of auditory, visual and tactile cues is vital. Such situation-dependent implicit cues are important aids to memory, and have long been used in crime reconstruction scenarios to enhance recall. Increased cue overlap between situations in which memories are encoded or learned, and when recall is required, improves memory retrieval.⁵

Additionally, attention should be paid to the psychological and emotional aspects of the encounter. Such issues are likely to affect the more cognitive aspects of performance, and OSCEs provide

one of the few opportunities to assess the impact of these factors on student performance.

When enhancing SP realism in an OSCE, a number of areas should be considered (Box 2).

STANDARDISED PATIENT PREPARATION AND ROLE PLAY

Although the main focus of this paper relates to the technologies and equipment that can be used to enhance realism, it is important to consider some aspects of SP role play.

Preparation of standardised patient verbal and non-verbal responses

The importance of clear guidance for SPs about their roles cannot be overestimated. However, it is naive to think that SPs can truly portray the role of a patient when they have no experience of the actual clinical condition. Developing simulated responses from actual patient narratives can enhance realism.⁴

OSCEs provide an opportunity to observe candidates interact with real or simulated patients

Providing guidance on simulated emotional responses can improve the fidelity of the interaction

Box 2. Areas to be considered when enhancing the realism of a simulated patient (SP) encounter in an objective structured clinical examination (OSCE)

Standardised patient preparation and role play

- List the characteristics of the SP in relation to the clinical situation being portrayed
- Prepare the SP's verbal and non-verbal responses
- Simulate physical signs

Equipment used in combination with standardised patient

- Special effects make-up and prosthetics
- Medical equipment, attached to the SP
- Hybrid simulation

Environment surrounding the patient

Instruction on the timing of non-verbal responses should also be considered: for example, instructing an SP who is linked to a venepuncture manikin arm to close their eyes and wince with pain at the moment the candidate inserts a cannula. Also, providing guidance on simulated emotional responses can improve the fidelity of the interaction: for example, exhibiting shock after being informed of a cancer diagnosis.

Simulating physical signs

The SPs can be trained to portray a range of clinical signs: for example, simulating abdominal tenderness (Figure 1) or a visual field defect such as homonymous hemianopia. However, there is a limit to the clinical signs that SPs can simulate. Patients with real clinical signs can also simulate clinical scenarios. For example, a patient with osteoarthritic changes in their hands can be trained to simulate some of the clinical signs of carpal tunnel syndrome.



Figure 1. Standardised patient simulating tenderness in the right iliac fossa area of their abdomen

EQUIPMENT USED IN COMBINATION WITH A STANDARDISED PATIENT

There have been many advances in the use of technology in simulation. Such equipment can be applied, or linked, to an SP in order to recreate an authentic clinical encounter. This allows the assessment of a range of integrated skills, including technical, clinical and communication skills.

Special effects make up and prosthetics

Special effects, make-up and prosthetics can recreate an array of injuries and skin conditions: for example, bruising, burns, grazes, cyanosis and skin wounds (Figure 2). Spraying water onto an SP can quickly simulate perspiration: for example, for a patient simulating a myocardial infarction. However, more sophisticated techniques, particularly using prosthetics, require expertise in applying them, and may not be practical in an OSCE.

Certain skin lesions can be reproduced to a high degree of realism by creating transfer tattoos of the lesion.⁶ For example, a temporary malignant melanoma



Figure 2. Special effects make-up applied to a standardised patient's forehead to simulate a bruise following a head injury

tattoo can be applied to an SP (Figure 3). Candidates can be assessed not only on their ability to make a diagnosis but also on how they communicate the serious diagnosis to a patient. In our experience they are robust and amenable to multiple examinations.

Attachment of medical equipment

In the real clinical environment, patients often have medical equipment attached to or inserted into their body. Depending on the OSCE station scenario, using such equipment may enhance authenticity, for example applying a stoma device to an SP's abdomen.

Such equipment can also be used in assessing a candidate's clinical skills: for example, in



Figure 3. (a) High-fidelity temporary transfer tattoo of a malignant melanoma applied to a standardized patient's neck area. (b) A candidate interacts with an anxious standardized patient who is concerned about the 'skin mole' on their neck



Figure 4. (a) Mock-up of a peripheral venous cannula and collection bag attached to standardized patient. (b) Candidate 'administering' an 'intravenous drug' into a simulated patient



Figure 5. A suturing pad is applied to a standardized patient's arm while a candidate inserts sutures into the wound

administering intravenous medication. Without actually inserting a cannula, it can be applied to an SP's arm. By attaching tubing (which is concealed by the patient's clothing) to the cannula, intravenous sim-

ulated medication administered can be drained into a collection bag (Figure 4).

Hybrid simulation

There are a wide range of manikin devices commonly used in medical

student teaching: artificial arms that allow venous cannulation; vaginal/rectal examination manikins; urethral catheterisation manikins; and artificial skin pads that can allow the administration of an intramuscular drug or the suturing of a skin wound. Of interest, applying artificial blood and 'glass' (small pieces of perspex) can further enhance the assessment of a skin wound prior to suturing. However, carrying out such procedures on bench-top manikins generally only allows the assessment of isolated technical skills. Linking the manikin to an SP can contribute to a more realistic encounter.⁷ As well as technical abilities, such hybrid simulation can also assess candidates' behavioural responses to the more humanistic aspects of the encounter. For example, SPs can be trained to demonstrate pain (i.e. they require further local anaesthetic) when a candidate starts suturing an artificial skin wound attached to the SP's arm (Figure 5).

Hybrid simulation can also assess candidates' behavioural responses

Other innovations

Video clips of real patients, and their clinical features, are sometimes used in OSCEs. It could be argued that just playing a video clip in an OSCE is not appropriate. However, videos can be used in conjunction with an SP to recreate a clinical scenario. For example, an anxious simulated parent who has captured their child having an absence attack, on their mobile phone camera, and is keen to know the diagnosis. Electronic stethoscopes have been developed, allowing a range of auscultatory findings to be heard when applied to a patient. One such device, the Ventriloscope, has been shown to enhance the validity of an OSCE setting.^{8,9}

ENVIRONMENT SURROUNDING THE PATIENT

A range of simple techniques can modify the environment surrounding the SP, presenting

By applying a series of simple techniques, the scenario can portray a more realistic experience

enough stimuli for the candidate to perceive that they are in a real clinical scenario. The equipment itself can also be integral in the assessment of candidates: for example, clinical observation and drug charts at the patient's bedside; urinary catheter bag with fake blood-stained urine; or a sputum cup on the patient's bedside cabinet.

The stimulus doesn't just have to be visual! For example, the urgency of a patient presenting with a myocardial infarction can be intensified with a laptop computer mimicking a cardiac monitor and the insistent beeps of a sinus tachycardia. As practising clinicians, the smell of alcohol or ketones can often provide vital clues in the initial assessment of an unconscious patient. A patient with a head injury, who is intoxicated with alcohol, can be recreated by spraying alcohol near to an SP who is simulating a reduced level of consciousness and has an artificial bruise on their forehead.

CONCLUSION

Often OSCE stations can be artificial and detached from clinical practice. However, by applying a series of simple techniques, the

scenario can portray a more realistic experience. Potentially this can trigger more authentic conscious responses and implicit reactions from candidates that they may be less aware of. Assessment can be made not only on a candidate's technical abilities but also on the more humanistic aspects of the encounter. There is no doubt that many other techniques and technologies are being used in OSCEs. Sharing these ideas will be of benefit to all and could potentially allow the assessment of skills that were previously not considered possible in an OSCE. However, it is important that such methods are driven more by pedagogy than by novelty. Equally, OSCEs should always be used in combination with other forms of assessment when judging clinical competency. Interacting with real patients, as in work-based forms of assessment, should always be considered.

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Corresponding author's contact details: Dr Gerry J. Gormley, Department of General Practice, Queen's University Belfast, Dunluce Health Centre, 1 Dunluce Avenue, Belfast, BT9 7HR, UK. E-mail: g.gormley@qub.ac.uk

Funding: None.

Conflict of interest: None.

Ethical approval: Not required.

doi: 10.1111/j.1743-498X.2012.00626.x



A video to accompany this paper is available via the QR code or at: <http://youtu.be/nWuj9XrpQhw>